IN THE CLAIMS

Please delete claims 5, 10, and 14.

Please amend claims 1-3, 6-8, 11, 15-17, 20, 25-31, and 33-35 as follows:

---

a'

Sub B

1. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis over a definable range of rotation, said magnetic rotational position sensor comprising:

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] <u>swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on</u> a second rotational axis over the definable range of rotation, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] <u>swept out over the definable range of rotation by an outer end of a second radius having its opposite end located on</u> said second rotational axis;

a magnet having a first pole surface and a second pole surface to generate magnetic flux, said magnet disposed within said air gap area of said loop pole piece,

wherein said first pole surface of said magnet faces said inner [diameter] surface of said first pole piece and said second pole surface of said magnet faces said inner [diameter] surface of said second pole piece to enclose said magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

a

wherein said first pole surface of said magnet spatially faces said inner [diameter] surface of said first pole piece to define a working air gap area of said air gap area therebetween, and

wherein said loop pole piece and said magnet are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation whereby each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation exclusively corresponds to a distinct degree of synchronized rotation of said magnetic field about said second rotational axis over the definable range of rotation; and

Sub B1

a magnetic flux sensitive transducer disposed within said working air gap area, said magnetic flux sensitive transducer being operable to [a] sense a magnetic flux density of any portion of said magnetic flux passing through said magnetic flux sensitive transducer,

a' cont

wherein said inner [diameter] surface of said first pole piece and said first pole surface of said magnet are contoured to arcuately configure said working air gap area therebetween whereby said magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field over the definable range of rotation.

a

2. (Amended) The magnetic rotational position sensor of claim 1 wherein said inner [diameter] surface of said first pole piece has a concave contour and said first pole surface of said magnet has a convex contour.

a1 concld

3. (Amended) The magnetic rotational position sensor of claim 1 wherein said inner [diameter] surface of said first pole piece has a convex contour and said first pole surface of said magnet has a concave contour.

---

a2

Sub B3

6. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis over a definable range of rotation, said magnetic rotational position sensor comprising:

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on a second rotational axis over the definable range of rotation, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a second radius having its opposite end located on said second rotational axis;

a magnet having a first pole surface and a second pole surface to generate magnetic flux, said magnet disposed within said air gap area of said loop pole piece,

a

81

wherein said first pole surface of said magnet faces said inner [diameter] surface of said first pole piece and said second pole surface of said magnet faces said inner [diameter] surface of said second pole piece to enclose said magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

Sub B3

wherein said first pole surface of said magnet spatially faces said inner [diameter] surface of said first pole piece to define a first working air gap area of said air gap area therebetween and said second pole surface of said magnet spatially faces said inner [diameter] surface of said second pole piece to define a second working air gap area of said air gap area therebetween, and

wherein said loop pole piece and said magnet are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation whereby each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation exclusively corresponds to a distinct degree of synchronized rotation of said magnetic field about said second rotational axis over the definable range of rotation;

A2 Cont

a first magnetic flux sensitive transducer disposed within said first working air gap area, said first magnetic flux sensitive transducer being operable to [a] sense a magnetic flux density of any first portion of said magnetic flux passing through said first magnetic flux sensitive transducer,

wherein said inner [diameter] surface of said first pole piece and said first pole surface of said magnet are contoured to arcuately configure said first working air

Sub B2

gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field over the definable range of rotation; and

a second magnetic flux sensitive transducer disposed within said second working air gap area, said second magnetic flux sensitive transducer being operable to [a] sense a magnetic flux density of any second portion of said magnetic flux passing through said second magnetic flux sensitive transducer,

wherein said inner [diameter] surface of said second pole piece and said second pole surface of said magnet are contoured to arcuately configure said second working air gap area therebetween whereby said second magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field over the definable range of rotation.

a2 concld

6 ~~7~~. (Amended) The magnetic rotational position sensor of claim 5 ~~6~~ wherein said inner [diameter] surface of said first pole piece has a concave contour, and said first pole surface of said magnet has a convex contour.

7 ~~8~~. (Amended) The magnetic rotational position sensor of claim 6 ~~7~~ wherein said inner [diameter] surface of said second pole piece has a [concave] <u>convex</u> contour, and said second pole surface of said magnet has a [convex] <u>concave</u> contour.

a

83

11. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis over a definable range of rotation, said magnetic rotational position sensor comprising:

a3

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on a second rotational axis over the definable range of rotation, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a second radius having its opposite end located on said second rotational axis;

Sub B3

a first magnet having a first pole surface and a second pole surface to generate a first set of magnetic flux, said first magnet disposed within said air gap area of said loop pole piece;

a second magnet having a first pole surface and a second pole surface to generate a second set of magnetic flux, said second magnet disposed within said air gap area of said loop pole piece,

wherein said first pole surface of said first magnet faces said inner [diameter] surface of said first pole piece, said first pole surface of said second magnet faces said inner [diameter] surface of said second pole piece, and said second pole surface of said first magnet faces said second pole surface of said second magnet to

enclose said first set of magnetic flux and said second set of magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

wherein said second pole surface of said first magnet spatially faces said second pole surface of said second magnet to define a working air gap area of said air gap area therebetween, and

Sub B3

wherein said loop pole piece, said first magnet, and said second magnet are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation whereby each degree of rotation of the control shaft about the first rotational axis over the definable range of rotation exclusively corresponds to a distinct degree of synchronized rotation of said magnetic field about said second rotational axis over the definable range of rotation; and

a magnetic flux sensitive transducer disposed within said working air gap area, said magnetic flux sensitive transducer being operable to [a] sense a magnetic flux density of a portion of a compilation of said first set of magnetic flux and said second set of magnetic flux passing through said magnetic flux sensitive transducer,

A3 Concld

wherein said second pole surface of said first magnet and said second pole surface of said second magnetic are contoured to arcuately configure said working air gap area therebetween whereby said magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said at least one magnetic field over the definable range of rotation.

D

15. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis, said magnetic rotational position sensor comprising:

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on a second rotational axis, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on said second rotational axis;

a first magnet having a first pole surface and a second pole surface to generate a first set of magnetic flux, said first magnet disposed within said air gap area of said loop pole piece;

a second magnet having a first pole surface and a second pole surface to generate a second set of magnetic flux, said second magnet disposed within said air gap area of said loop pole piece,

wherein said first pole surface of said first magnet faces said inner [diameter] surface of said first pole piece, said first pole surface of said second magnet faces said inner [diameter] surface of said second pole piece, and said second pole surface of said first magnet faces said second pole surface of said second magnet to

enclose said first set of magnetic flux and said second set of magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

wherein said first pole surface of said first magnet spatially faces said inner [diameter] surface of said first pole piece to define a first working air gap area of said air gap area therebetween and said [second] first pole surface of said second magnet spatially faces said inner [diameter] surface of said second pole piece to define a second working air gap area of said air gap area therebetween, said first working air gap area and said second working air gap area being contiguous,

Sub B4

wherein said loop pole piece, said first magnet, and said second magnet are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis whereby each degree of rotation of the control shaft about the first rotational axis exclusively corresponds to a distinct degree of synchronized rotation of said magnetic field about said second rotational axis; and

a4 cont

a first magnetic flux sensitive transducer disposed within said air gap area of said loop pole piece, said first magnetic flux sensitive transducer locatable within said first working air gap area and locatable within said second working air gap area as said magnetic field is synchronously rotated about said second rotational axis, said first magnetic flux sensitive transducer being operable to [a] sense a magnetic flux density of any portion of said first set of magnetic flux passing through said first magnetic flux sensitive transducer when said first magnetic flux sensitive transducer is located within said first working air gap area and being operable to [a] sense a magnetic flux density of

A

any portion of said second set of magnetic flux passing through said first magnetic flux sensitive transducer when said first magnetic flux sensitive transducer is located within said second working air gap area,

Sub B2

wherein said first pole surface of said first magnet and said inner [diameter] surface of said first pole piece are contoured to arcuately configure said first working air gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said magnetic flux sensitive transducer is located within said first working air gap area, and

wherein said first pole surface of said second magnet and said inner [diameter] surface of said second pole piece are contoured to arcuately configure said second working air gap area therebetween whereby said magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density passing through said magnetic flux sensitive transducer for each degree of said synchronized rotation of the control shaft and said magnetic field when said magnetic flux sensitive transducer is located within said second working air gap area.

a4 cont

13 ~~16.~~ (Amended) The magnetic rotational position sensor of claim ~~15~~ 12 wherein said inner [diameter] surface of said first pole piece has a concave contour and said first pole surface of said first magnet has a convex contour.

83

2

a4 cont'd

14 ~~17~~. (Amended) The magnetic rotational position sensor of claim 13 ~~16~~ wherein said inner [diameter] surface of said second pole piece has a concave contour and said first pole surface of said second magnet has a convex contour.

a5

Sub B5

20. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis, said magnetic rotational position sensor comprising:

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on a second rotational axis, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on said second rotational axis;

a first magnet having a first pole surface and a second pole surface to generate a first set of magnetic flux, said first magnet disposed within said air gap area of said loop pole piece;

a second magnet having a first pole surface and a second pole surface to generate a second set of magnetic flux, said second magnet disposed within said air gap area of said loop pole piece;

84

a third magnet having a first pole surface and a second pole surface to generate a third set of magnetic flux, said third magnet disposed within said air gap area of said loop pole piece;

a fourth magnet having a first pole surface and a second pole surface to generate a fourth set of magnetic flux, said fourth magnet disposed within said air gap area of said loop pole piece,

Sub B5

wherein said first pole surface of said first magnet faces said first pole surface of said third magnet, said second pole surface of said third magnet faces said inner [diameter] surface of said first pole piece, said first pole surface of said second magnet faces said first pole surface of said fourth magnet, said second pole surface of said fourth magnet faces said inner [diameter] surface of said second pole piece, and said second pole surface of said first magnet faces said second pole surface of said second magnet to enclose said first set of magnetic flux, said second set of magnetic flux, said third set of magnetic flux and said fourth set of magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

A5 Cont

wherein said first pole surface of said first magnet spatially faces said first pole surface of said third magnet to define a first working air gap area of said air gap area therebetween and said second pole surface of said second magnet spatially faces said first pole surface of said fourth magnet to define a second working air gap area of said air gap area therebetween, <u>said first working air gap area and said second working air gap area being contiguous,</u>

LR

wherein said loop pole piece, said first magnet, said second magnet, said third magnet and said fourth magnet are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis whereby each degree of rotation of the control shaft about the first rotational axis exclusively corresponds to a distinct degree of synchronized rotation of magnetic field about said second rotational axis; and

S33

a first magnetic flux sensitive transducer disposed within said air gap area of said loop pole piece, said first magnetic flux sensitive transducer locatable within said first working air gap area and locatable within said second working air gap area as said loop pole piece, said first magnet, said second magnet, said third magnet and said fourth magnet are synchronously rotated about said second rotational axis, said first magnetic flux sensitive transducer operable to [a] sense a magnetic flux density of any compilation of said first set of magnetic flux and said third set of magnetic flux when located within said first working air gap area and being operable to a magnetic flux density of any compilation of said second set of magnetic flux and said fourth set of magnetic flux when located within said second working air gap area,

a5 cont

wherein said first pole surface of said first magnet and said first pole surface of said third magnet are contoured to arcuately configure said first working air gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said first magnetic flux sensitive transducer is located within said first working air gap area, and

a

Sub B5

a5 Concld

wherein said first pole surface of said second magnet and said first pole surface of said fourth magnet are contoured to arcuately configure said second working air gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said first magnetic flux sensitive transducer is located within said second working air gap area.

---

a6

25. (Amended) The magnetic rotational position sensor of claim 20 further comprising a second magnetic flux sensitive transducer, said second magnetic flux sensitive transducer operable to sense a magnetic flux density passing through said second magnetic flux sensitive transducer,

Sub B6

wherein said second pole surface of said third magnet spatially faces said inner [diameter] surface of said first pole piece to define a third working air gap area of said air gap area therebetween and said second pole surface of said fourth magnet spatially faces said inner [diameter] surface of said second pole piece to define a fourth working air gap area of said air gap area therebetween,

wherein said second magnetic flux sensitive transducer is disposed within said air gap area of said loop pole piece, said second magnetic flux sensitive transducer locatable within said third working air gap area and locatable within said fourth working air gap area as said loop pole piece, said first magnet, said second magnet, said third magnet and said fourth magnet are synchronously rotated about said second rotational axis,

A

wherein said second magnetic flux sensitive transducer is operable to [a] sense a magnetic flux density of any portion of said second set of magnetic flux when located within said third working air gap area and is operable to a magnetic flux density of any portion said fourth set of magnetic flux when located within said fourth working air gap area,

Sub B6

wherein said second pole surface of said third magnet and said inner [diameter] surface of said first pole piece are contoured to arcuately configure said third working air gap area therebetween whereby said second magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said second magnetic flux sensitive transducer is located within said third working air gap area, and

wherein said second pole surface of said fourth magnet and said inner [diameter] surface of said second pole piece are contoured to arcuately configure said fourth working air gap area therebetween whereby said second magnetic flux sensitive transducer is operable to sense a different magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said second magnetic flux sensitive transducer is located within said fourth working air gap area.

a6 cont

23 ~~26~~. (Amended) The magnetic rotational position sensor of claim 22 ~~25~~ wherein said second pole surface of said third magnet has a convex contour and said inner [diameter] surface of said first pole piece has a concave contour.

85

24

~~27~~. (Amended) The magnetic rotational position sensor of claim ~~25~~ 22 wherein said second pole surface of said fourth magnet has a convex contour and said inner [diameter] surface of said second pole piece has a concave contour.

Sub B7

28. (Amended) A magnetic rotational position sensor for sensing each degree of rotation of a control shaft about a first rotational axis, said magnetic rotational position sensor comprising:

a loop pole piece including a plurality of pole pieces serially adjoined in a closed configuration to define an air gap area, a first pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] <u>swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on</u> a second rotational axis, a second pole piece of said plurality of pole pieces having an inner [diameter] surface [radially extending from] <u>swept out over the definable range of rotation by an outer end of a first radius having its opposite end located on</u> said second rotational axis;

A6 cont

a <u>first</u> magnet having a first pole surface, and a second pole surface to generate a first set of magnetic flux, said first magnet disposed within said air gap area of said loop pole piece;

a [loop] <u>second</u> magnet having a first pole surface, a second <u>pole</u> surface, a third pole surface, and a fourth pole surface to generate a second set of magnetic flux, said second [loop] magnet disposed within said air gap area of said loop pole piece,

86

wherein said first pole surface of said first magnet faces said first pole surface of said [loop] second magnet, said second pole surface of said [loop] second magnet faces said inner [diameter] surface of said first pole piece, said second pole surface of said first magnet faces said third pole surface of said [loop] second magnet, and said fourth pole surface of said [loop] second magnet faces said inner [diameter] surface of said second pole piece to enclose said first set of magnetic flux, and said second set of magnetic flux within said loop pole piece whereby a magnetic field is established throughout said air gap area,

Sub B7

wherein said first pole surface of said first magnet spatially faces said first pole surface of said [loop] second magnet to define a first working air gap area of said air gap area therebetween and said second pole surface of said first magnet spatially faces said third pole surface of said [loop] second magnet to define a second working air gap area of said air gap area therebetween, said first working air gap area and said second working air gap area being contiguous,

A6 cont

wherein said loop pole piece, said first magnet, and said [loop] second magnet[,] are adjoined to the control shaft to synchronously rotate about said second rotational axis for each degree of rotation of the control shaft about the first rotational axis whereby each degree of rotation of the control shaft about the first rotational axis exclusively corresponds to a distinct degree of synchronized rotation of said magnetic field about said second rotational axis; and

a first magnetic flux sensitive transducer disposed within said air gap area of said loop pole piece, said first magnetic flux sensitive transducer locatable within said first

working air gap area of said loop pole piece and locatable within said second working air gap area of said loop pole piece as said loop pole piece, said first magnet, and said [loop] second magnet are synchronously rotated about said second rotational axis, said first magnetic flux sensitive transducer operable to [a] sense a magnetic flux density of any compilation of said first set of magnetic flux and said second set of magnetic flux passing through said first magnetic flux sensitive transducer,

Sub B3

wherein said first pole surface of said first [loop] magnet and said first pole surface of said second [loop] magnet are contoured to arcuately configure said first working air gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said first magnetic flux sensitive transducer is located within said first working air gap area, and

wherein said second pole surface of said first [loop] magnet and said third pole surface of said second [loop] magnet are contoured to arcuately configure said second working air gap area therebetween whereby said first magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said first magnetic flux sensitive transducer is located within said second working air gap area.

a6 cont

A

26
~~29.~~ (Amended) The magnetic rotational position sensor of claim ~~28~~ 25 wherein said first pole surface of said first magnet has a convex contour and said first pole surface of said [loop] second magnet has a concave contour.

27
~~30.~~ (Amended) The magnetic rotational position sensor of claim ~~28~~ 25 wherein said second pole surface of said first magnet has a convex contour and said third pole surface of said [loop] second magnet has a concave contour.

Sub B8

C6 Concld

31. (Amended) The magnetic rotational position sensor of claim 28 further comprising an auxiliary pole piece, wherein said first magnet [is a second loop magnet having a first inner diameter pole surface and a second inner diameter pole surface spatially facing said first inner diameter pole surface] further has a third pole surface and a fourth pole surface spatially facing said third pole surface, said auxiliary pole piece being disposed between [said first inner diameter pole surface and said second inner diameter pole surface] said third pole surface and said fourth pole surface.

C7

Sub B9

33. (Amended) The magnetic rotational position sensor of claim 28 further comprising a second magnetic flux sensitive transducer, said second magnetic flux sensitive transducer operable to sense a magnetic flux density of any second compilation of said first set of magnetic flux and said second set of magnetic flux passing through said second magnetic flux sensitive transducer,

Response to First Non-Final Office Action
U.S. Patent Serial No.: 09/211,538
Inventor: Zhao
Pat. Att. Ref.: 3064-128

87

9

wherein said second pole surface of said [loop] second magnet spatially faces said inner [diameter] surface of said first pole piece to define a third working air gap area of said air gap area therebetween, and said fourth pole surface of said [loop] second magnet spatially faces said inner [diameter] surface of said second pole piece to define a fourth working air gap area of said air gap area therebetween, said third working air gap area and said fourth working air gap area being contiguous,

wherein said second magnetic flux sensitive transducer is disposed within said air gap area of said loop pole piece, said second magnetic flux sensitive transducer locatable within said third working air gap area and locatable within said fourth working air gap area as said loop pole piece, said first magnet, and said second magnet[, said third magnet and said fourth magnet] are synchronously rotated about said second rotational axis,

Sub B9

wherein said first pole surface of said second [loop] magnet and said inner [diameter] surface of said first pole piece are contoured to arcuately configure said third working air gap area therebetween whereby said second magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each degree of said synchronized rotation of the control shaft and said magnetic field when said second magnetic flux sensitive transducer is located within said third working air gap area, and

a7 cont

wherein said fourth pole surface of said second [loop] magnet and said inner [diameter] surface of said second pole piece are contoured to arcuately configure said fourth working air gap area therebetween whereby said second magnetic flux sensitive transducer is operable to sense a different magnitude of magnetic flux density for each

A

Sub B9

degree of said synchronized rotation of the control shaft and said magnetic field when said second magnetic flux sensitive transducer is located within said fourth working air gap area.

31 ~~34~~. (Amended) The magnetic rotational position sensor of claim ~~33~~ 30 wherein said second pole surface of said [loop] <u>second</u> magnet has a convex contour and said inner [diameter] surface of said first pole piece has a concave contour.

A7 Concld Sub B10

32 ~~35~~. (Amended) The magnetic rotational position sensor of claim ~~33~~ 30 wherein said fourth pole surface of said [loop] <u>second</u> has a convex contour and said inner [diameter] surface of said second pole piece has a concave contour.

88